

V. Sanitary Sewer, Solid Waste, Drainage, Potable Water, and Natural Groundwater Aquifer Recharge Element

Sanitary Sewer

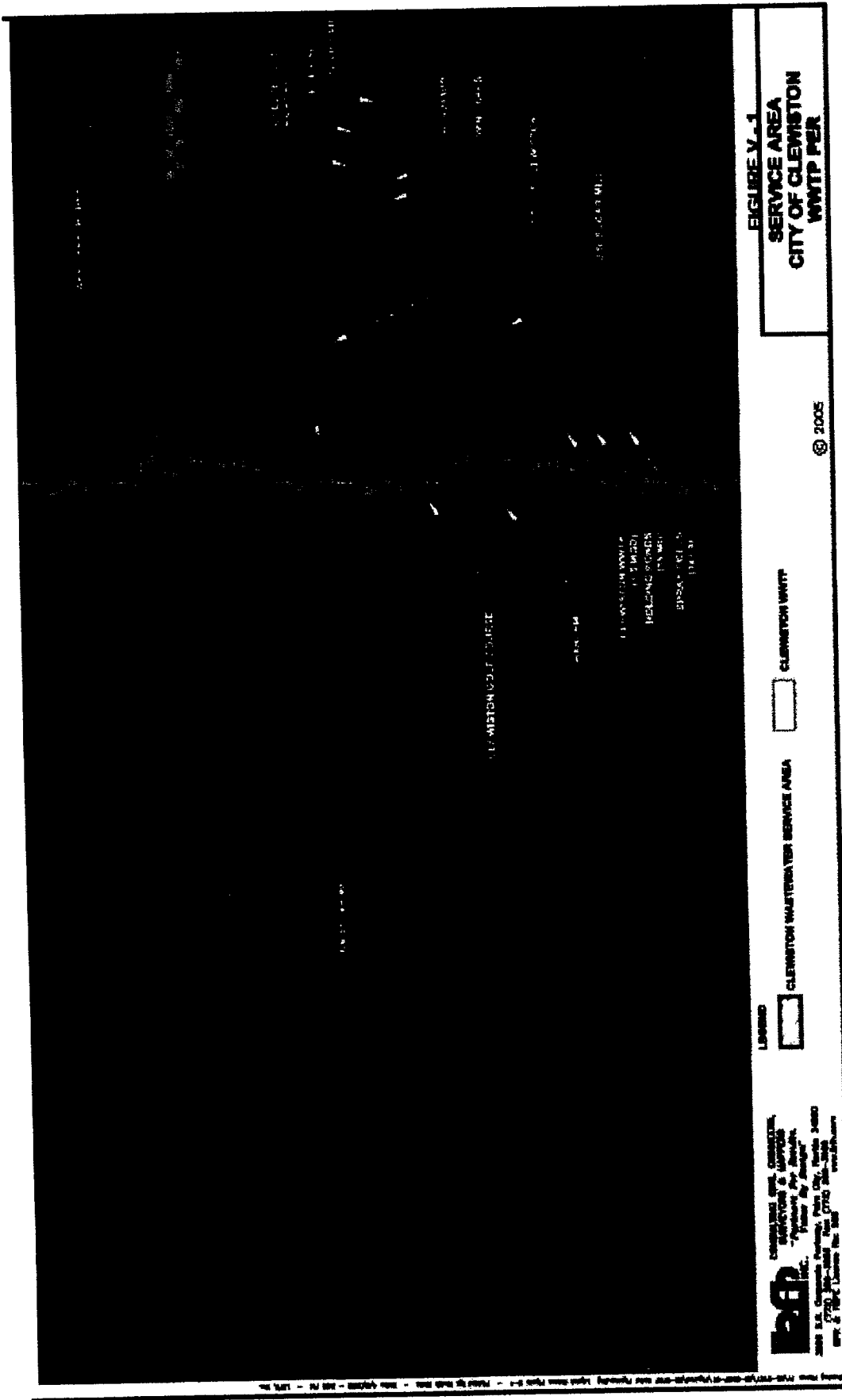
Existing Public System

The City of Clewiston operates its own wastewater collection, transmission, and treatment system. Through periodic improvement and upgrading of its facilities, and regular maintenance, the City has heretofore been able to meet its needs adequately. The capacity of the City's treatment plant is 1.5 MDG (million gallons per day) and the current demand is 1.1 MDG.

The City's wastewater conveyance system is located throughout the Clewiston wastewater service area. The pumping station includes 45 lift stations and approximately 40 miles of eight-inch gravity sewer lines and force mains. The majority of wastewater from the City is conveyed 1.5 miles through a 12" force main from the main lift station to the treatment plant. Lift stations in the Harlem community pump directly to the WWTP.

Treatment Plant

The City's wastewater treatment plant was built in 1987 and is located about 2.2 miles south of the City. It provides service to Clewiston and Harlem, and accepts wastewater from five mobile home parks east of the city limits (See Figure V-1 Service Area). The plant is permitted at 1.5 MGD annual average daily flow, to serve the wastewater collection system within the Clewiston wastewater service area. There are approximately 3,500 sewer connections and 44 sewer lift stations within the City. The plant currently operates at 1.1 million gallons per day.



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Adopted: March 18, 1991
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The system consists of a sewage collection and conveyance network; and an extended aeration (oxidation ditch) process domestic wastewater treat plant. The plant is located on the south side of the city and encompasses approximately 220.5 acres, including the influent screening and grit removal, two oxidation ditches, two secondary classifiers, sodium, hypochlorite disinfection, effluent holding ponds, sprayfields and aerobic/lime digesters.

Impact on Natural Resources

Water is the only surrounding natural resource notably impacted by the wastewater system. The treated effluent disposal procedure of a percolation pond and land surface irrigation provide recharge of the surficial groundwater aquifer, with limited discharge to the surface water system. This is a positive impact. Excess nutrients should be removed by the surface soil in the irrigation system prior to discharge from the under-drain system.

Historical Flows and Peaking Factors

Flow projection based on historical flow data references discharge monitoring report records and the previous Capacity Analysis Report from the City and the DEP. A summary of annual average daily flow and maxim day average flow is provided in Table V.1, Historical Flows and Peaking Factors at the plant.

Historical data was utilized to determine peaking factors for the maximum month maximum three-month and maximum day flows to average annual daily flow. These peaking factors are listed in the columns to the right in Table V.1.

Year	AADF (mgd)	M3MAADF (mgd)	MMADF (mgd)	MDF (mgd)	MMADF/ AADF	M3MAADF/ AADF	MDF/ AADF	MDF/ M3MAF
1990	0.793	0.855	0.912	-	1.150	1.078	-	-
1991	0.912	0.984	1.013	-	1.111	1.079	-	-
1992	0.962	1.043	1.059	-	1.101	1.084	-	-
1993	0.989	1.068	1.122	-	1.134	1.080	-	-
1994	1.078	1.262	1.313	-	1.218	1.171	-	-
1995	1.213	1.279	1.457	-	1.201	1.054	-	-
1996	1.217	1.276	1.422	-	1.168	1.048	-	-
1997	1.212	1.240	1.346	-	1.111	1.023	-	-
1998	1.268	1.398	1.515	-	1.195	1.103	-	-
1999	1.263	1.432	1.605	-	1.271	1.134	-	-
2000	1.091	1.104	1.105	1.279	1.054	1.012	1.159	1.218
2001	1.152	1.310	1.366	1.970	1.185	1.137	1.709	1.504
2002	1.175	1.260	1.460	1.950	1.242	1.072	1.659	1.548
2003	1.167	1.246	1.325	1.879	1.135	1.068	1.610	1.508
2004	1.251	1.447	1.623	2.487	1.297	1.157	1.988	1.719
2005	1.332	1.405	1.600	2.219	1.201	1.055	1.666	1.579
Average					1.173	1.085	1.632	1.513

Source: 1. Capacity Analysis Report Dated December 2001 (1990 to 2000)
2. DEP Discharge Monitoring Report (2001 to 2005)

Notes: Flow data is based on recorded flows into the chlorine contact chamber.

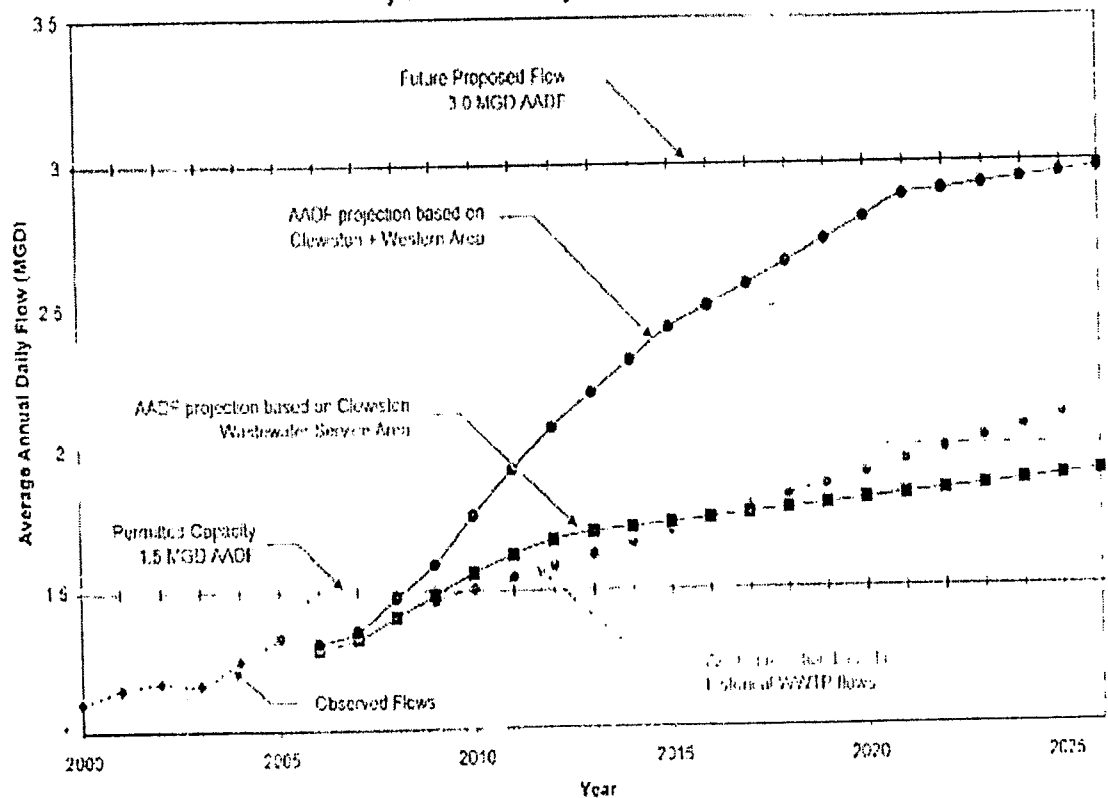
Legend:

AADF = Annual Average Daily Flow
M3MADF = Maximum Three Month Average Daily Flow
MMADF = Maximum Monthly Average Daily Flow
MDF = Maximum Daily Flow

Flow projections were based on population growth and recorded wastewater flows from the WWTP. The average number of gallons per capita was established by dividing reported wastewater flow records from the past five years (2000 through 2005) by the corresponding population estimates (Per Capita Wastewater Flow = Annual Average Daily Flow/Population). An average per capita flow of approximately 107 gallons was calculated for this period for the Clewiston service area boundary. This per capita wastewater generation rate was multiplied by the population projection to predict future annual average daily flow to the plant. These flows are shown below on Figure V-2, City of Clewiston Projected WWTP flows.

FIGURE V - 2

City of Clewiston Projected WWTP Flows



Private Sewage Disposal Systems

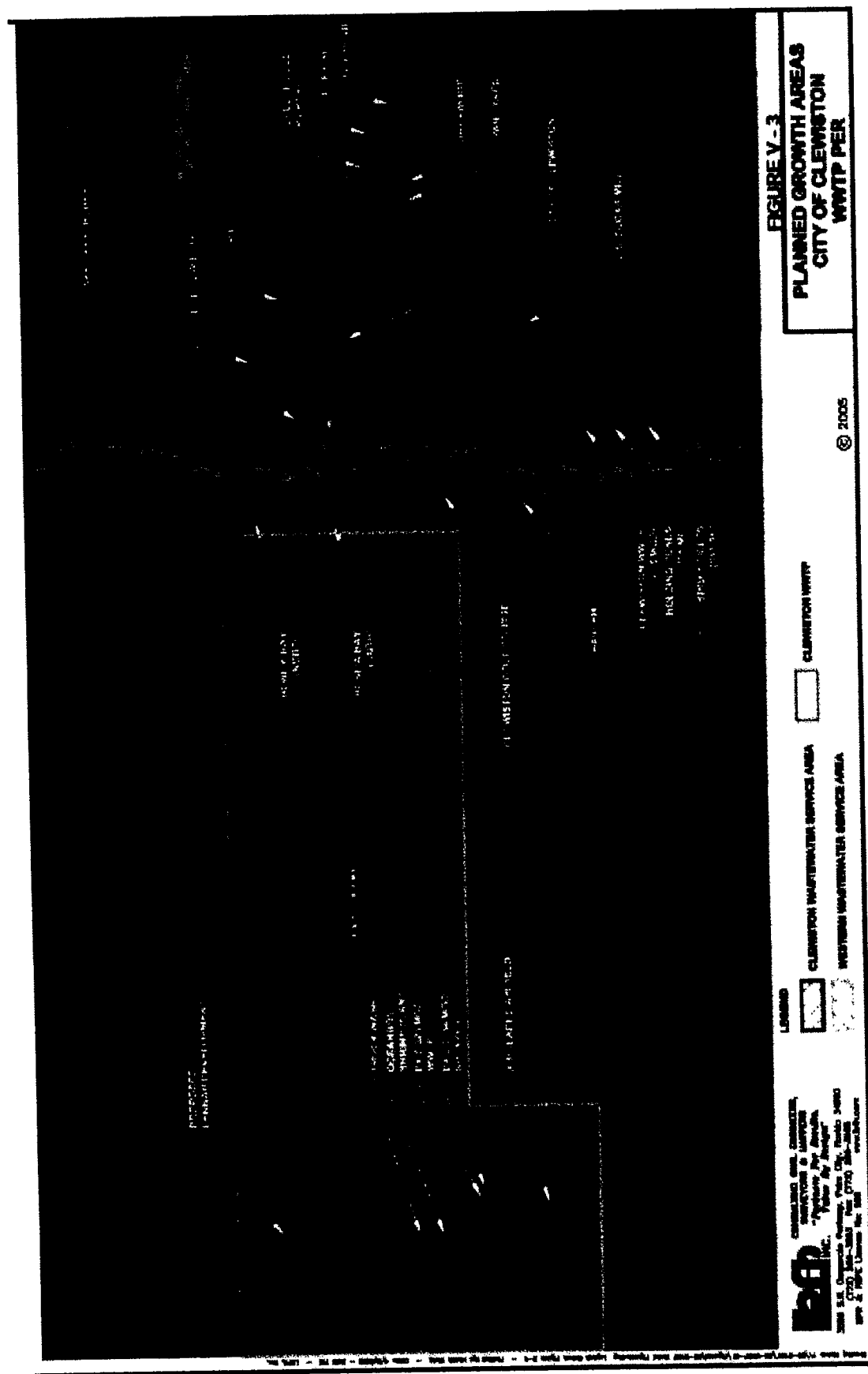
The City has two existing developments within the Clewiston wastewater service area currently on septic tanks; Ridge View Estates and The Ridge. Septic tanks are failing in these two developments and residents are requesting to connect to the planned sewer collection system. In addition the septic tanks limit property usage and new septic tanks are unsightly because they need to be raised approximately two to three feet to meet current installation codes. Also, City blocks 360, 405, 406, 407, 408, 413, and 414 require a sewage collection system to allow business development or growth.

Needs Assessment

The wastewater treatment plant and associated collection and transmission system is adequate to handle flows throughout the Clewiston and Western Wastewater Service Areas depicted in Figure V-3, through the year 2009. This area as a whole is expected to experience significant population growth over the next 20 years. Current permanent population for the City is estimated at 6,636. The service area population is estimated to be just over 12,000. Based on historical population growth and projects planned within the service area, the population to be served by wastewater treatment plant is expected to exceed 22,000 by 2015 and be over 25,000 by the year 2020.

The overall condition of the plant is considered good. However, it is currently operating at over 85% of its capacity and there is a need for expansion to accommodate population growth and failing septic tanks within the service area. There are also minor improvements that will need to be addressed. Based on current per capita treatment rates and anticipated growth in the service area, the current 1.5 MGD capacity should be adequate until about the year 2010.

The City has completed a feasibility study and design to expand the plant capacity to 3.0 MGD, doubling the plant capacity. The City has submitted an application for funding to the USDA and expects the plant expansion to be operational by year-end 2009. After the expansion of the wastewater treatment plant, main pump station and the construction of a force main to transport wastewater to the plant, the City will be able to serve the needs of projected growth in the service area to the year 2026 and will maintain its adopted level of service standard for sanitary sewer.



Sanitary Sewer Goals, Objectives, and Policies

- Goal 1:** A reliable sewage collection, transportation and treatment system which is built, maintained, and upgraded as necessary to meet the present and future needs of the City and adjacent areas served by the City at an affordable cost and without adverse effects on natural resources.
- Objective 1.1:** The City shall approve site plans for new developments only if public facilities have adequate capacity to serve proposed new development without exceeding level of service standards or that capacity will be available at time of impacts from such development.
- Policy 1.1.1:** The level of service standards for wastewater shall be 107 gallons per capita per day. This level of service shall be used as the basis for determining the availability of facility capacity and the demand generated by a development. For developments served by septic systems, compliance with state regulations shall be the measure of adequate level of service.
- Policy 1.1.2:** The City shall require that all new development connect to the City's centralized sanitary sewer system.
- Objective 1.2:** The City will take necessary steps to assure that both existing deficiencies and future demands will be met in a cost effective manner while maintaining adequate reserve capacity.
- Policy 1.2.1:** The City shall implement procedures to inspect and rehabilitate/replace sewer lines and manholes.
- Policy 1.2.2:** The City shall monitor effluent spray fields in order to permit the treatment plant to operate at its full design capacity.
- Policy 1.2.3:** The City will conduct a study and develop an implementation program by January 2009 for the orderly expansion of the collection/ transport system into areas without sewers. The study will also include an implementation and funding program.
- Policy 1.2.4:** The City will annually monitor and prepare a report on the collection system infiltration, inflow conditions and master pumping stations. The City will take corrective measures, as necessary, to reduce hydraulic loading, minimize cost of treatment if infiltration problems arise and replace the master pumping station as needed.

Policy 1.2.5:

The City will take all practical actions necessary to prepare for and complete the expansion of the wastewater treatment system so as to become operational by year-end 2009 and be capable of accommodating future growth through the year 2020.

Solid Waste

Existing Facilities and Services

The Hendry County landfill facility which serviced the entire County was closed in 1992. The facility was located in Pioneer Plantation and had a life span of 40 years. Since closure of the Pioneer Plantation facility, Lee County has been transporting all non-construction debris solid waste from incorporated and unincorporated Hendry County to the Lee County incinerator and the resulting ash back to the new 1,734 acre landfill off SR82 in southwest Hendry County. An intergovernmental agreement was signed by both counties for disposal of Hendry County's solid waste and will expire in 40 years.

In 1991, the City of Clewiston, together with Hendry County entered into an interlocal agreement with Lee County to open a new 1,700 acre landfill facility in the southwest portion of Hendry County to accept sanitary ash from the Lee County incinerator and also all construction debris from incorporated and unincorporated Hendry County. This facility opened in 1992 and can accommodate the solid waste generated by the City of Clewiston projected through 2030.

The State has mandated recycling programs requiring a 30% reduction of waste by December 31, 1994. Implemented, the recycling program increases the life expectancy of the landfill facility. Lee County provides a material recovery facility to allow for recycling and Hendry County provides the collection program for the recyclable material.

For 2005, the Lee County Solid Waste Division estimates the pounds per capita per day (PPCD) in Hendry County was approximately 7.2 PPCD. However, they note that this rate includes an undeterminable portion of construction debris. Therefore, for the purpose of this plan, the pounds per capita per day (PPCD) rate of solid waste disposal in Hendry County is estimated to be 5.9 PPCD. This rate has remained relatively unchanged since the last planning period, rising only about one percent per year. Through a county-wide recycling initiative, the anticipated rate increase for disposal waste has been kept in check.

Needs Assessment

The City should continue cooperating with Lee County and Hendry County in meeting its landfill needs and in achieving the recycling goals mandated by State law. In so doing, the life expectancy of the landfill will be extended and resource recovery will be furthered.

Solid Waste Goals, Objectives, and Policies

- Goal 1:** Solid waste collection and disposal service for residents and businesses within the City which is cost effective; has the least possible adverse impacts on the environment; and, which facilitates recycling of waste products in accordance with available technology and statutory requirements.
- Objective 1.1:** The City shall ensure that there are acceptable level of service capacity standards maintained at the Hendry-Lee disposal facility, that meet State mandated sanitary landfill use reduction requirements.
- Policy 1.1.1:** The City hereby establishes a level of service standard for solid waste generation of 5.3 lbs/capita/day.
- Policy 1.1.2:** The City shall cooperate with Hendry County and Lee County in any resource separation programs (e.g., newspaper, glass, and aluminum) and shall assist in implementing such program.
- Policy 1.1.3:** The City shall continue to participate in recycling programs to reduce the amount of generated solid waste required to be disposed of by landfill by 30%.
- Policy 1.1.4:** The City will coordinate with Hendry County for recyclable material collection.
- Objective 1.2:** The City will participate in effective coordination with other governmental entities to efficiently dispose of the solid waste generated by the community.
- Policy 1.2.1:** The City will continue to coordinate with Hendry County and Lee County and participate in an interlocal agreement for solid waste disposal and reduction of recyclable material.
- Objective 1.3:** The City will manage hazardous wastes originating in the City in a manner which protects natural resources and precludes human health hazards.
- Policy 1.3.1:** The City will in cooperation with Hendry County Solid Wastes Authority, develop a hazardous waste management program for the proper storage, recycling, collection and disposal of hazardous wastes.

Drainage

General

The City of Clewiston, Florida is located within the jurisdictional area of the South Florida Water Management District (SFWMD). The majority of the drainage responsibilities within the City are vested with the Clewiston Drainage District which encompasses the entire City area of approximately 3,000 acres, of which approximately 1/3 was developed urban area in 1975.

The Clewiston Drainage District (CDD) was originally created in 1924 and provides area protection by dikes, removal of surplus water by pumps, and control of overall water levels for irrigation and conservation. Secondary and local drainage are the responsibility of the City. The Public Works Department is consistently upgrading the City's infrastructure. The most recent project was the drainage system on Royal Palm Avenue. The new system will eliminate the flooding problems that traditionally occur in this area during the rainy seasons.

Natural Drainage

The topography and soils of the City are factors that affect natural drainage. The soils within the City are generally poorly drained and natural drainage flows from west to east in response to the topography. Soils in the City are comprised mainly of the Pompano-Delray—Charlotte associate with a small amount of the Okeelanta association along the northern corporate area. These soils are generally shallow poorly drained sand, shell marl, rock and muck with an underlying rock strata approximately 3 to 10 feet below the ground surface. The thickness of this rock strata is between 1 and 3 feet.

Topography is discussed in the Conservation Element. The conditions noted therein create a natural drainage direction from west to east.

Existing Drainage Facilities

Primary drainage is provided by the Clewiston Drainage District canals, pumps, and structures whereas secondary interior drainage is accomplished by swales and street drainage maintained by the City. All of the proposed drainage works specified in the "Revised Plan of Reclamation" have been completed and include a system of canals, bridges, culverts, pumping stations, and enclosure by perimeter dikes. The land in the City is served by a layout of 12 miles of lateral east-west canals that are located at approximately 1/2 mile intervals. These lateral canals carry flow either east or west to interceptor canals located at the east and west boundaries, then northward to a pair of stormwater pumping stations. Canals within the City are typically trapezoidal with 10-foot wide bottoms and 2:1 side slopes.

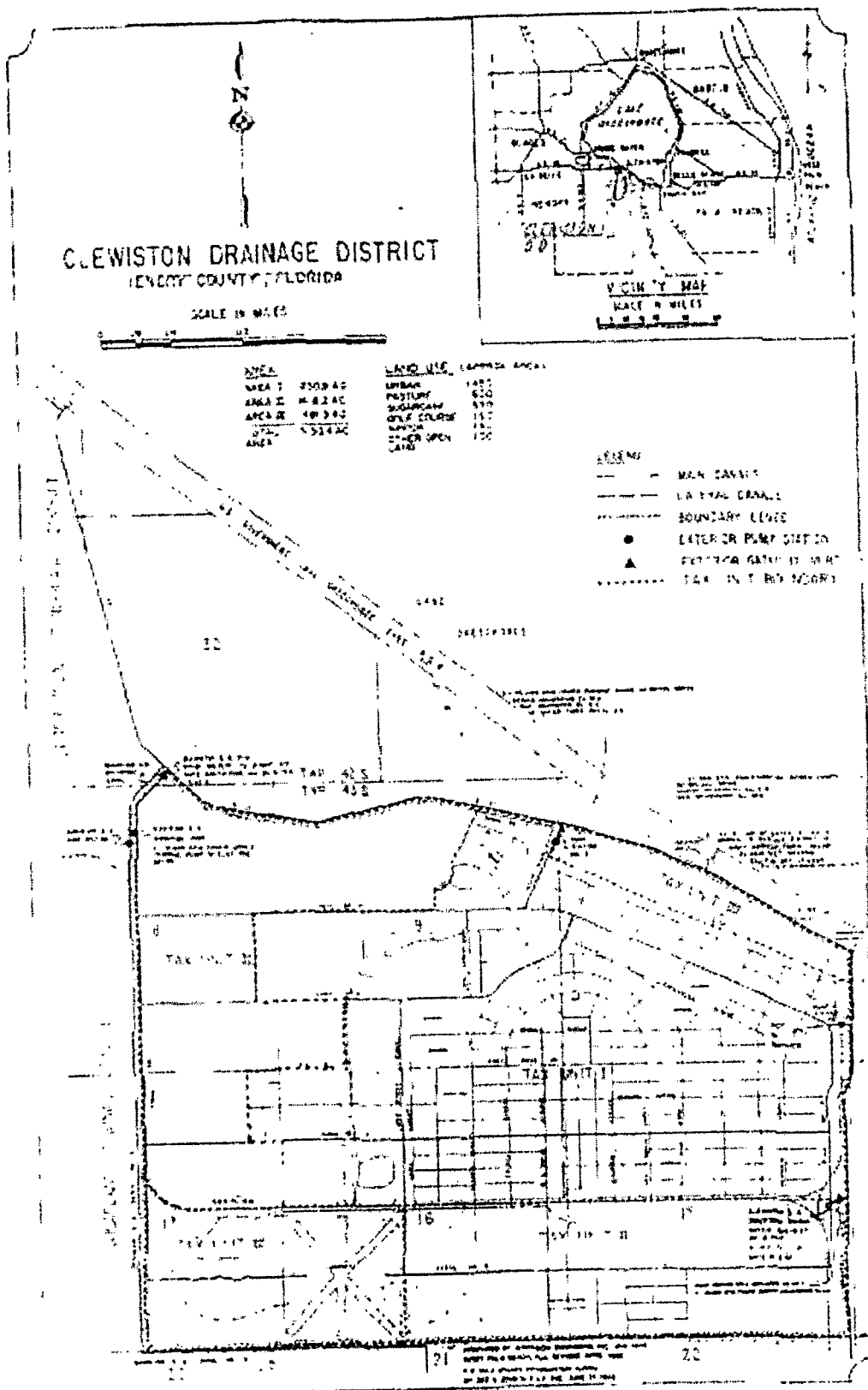
The pumping station in the northwest corner of the City is relatively new with a 16,000 gallon per minute (gpm) capacity into the City. A new Pump Station No. 3, with a capacity of 75,000 gpm was installed in 1987 in the southeastern portion of the City, replaces the older Pump Station No. 1. Pump Station No. 1 had a 74,000 gpm capacity and discharged to the Industrial Canal as does its replacement. Numerous culverts and bridges have been constructed to provide street crossings over the g canals. The District's Pump Station No. 2 is the primary pump station serving the City. This pump is located in the north central portion of the City and has the capacity to remove 2.5 inches of runoff per day from lands within the District, in accordance with the Corps of Engineers' (COE) General Design Memorandum, Part I, Supplement 39. This pump discharges into the catchments area bordering the Lake Okeechobee Levee which functions as a pretreatment area prior to entry into the C-20 Canal and, eventually the Caloosahatchee River.

The District's primary canals were designed to remove a minimum of 4.0 inches of runoff per day in developed areas of the City and 2.5 inches of runoff per day in agricultural areas. These canals convey that runoff to Pump Station No. 2. Therefore, the primary drainage system has been constructed according to its ultimate design. The locations of the primary canals and data for the pump stations are indicated on Figure V-4, *Clewiston Drainage District*. The secondary drainage system (i.e., storm sewers, roadside swales, etc.) is developed incrementally as urban development occurs so as to ensure the proper functioning of the system and the prevention of hazardous flooding conditions and property damage within the City. The level of service provided by the existing system has never been determined.

Inasmuch as information necessary to complete a capacity analysis of the existing secondary (storm sewer and swale) drainage system is not available, projected capacity analysis, including needs and opportunities for replacement or expansion of facilities cannot be provided. Interim level of service standards are established in this Comprehensive Plan, pending completion of a study of the existing system.

On the other hand, since the CDD is limited to an allowable discharge of 2.5 inches of runoff from lands within its boundaries and its primary drainage facilities have been designed accordingly, future improvements over and above maintenance requirements are not proposed. Nevertheless, requirements of the SFWMD shall be complied with should these be determined in the future. Water quality treatment, as required by SFWMD, is not provided for the District's canals and waterways. This system relies upon on-site secondary systems to provide water quality treatment.

FIGURE V - 4



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Flooding Potential

The present operating procedure and system capability provides priority District drainage to urban areas within Clewiston during storm conditions. Water control structures are in place that g retain runoff water from the western agricultural land until floodwaters in the urban area have subsided.

A flooding analysis published in March 1977 by the Department of Housing and Urban Development, Federal Insurance Administration indicates that approximately 18 percent (590 acres) of the total City area is within the 100 year flood zone elevation of 18 feet MSL and 27 percent is within the 500 year flood plain. Flood prone areas are shown in Figure V-5.

The majority of the City's central area is free from flood hazards except for localized minor flooding in the swales along several residential streets and west of the Clewiston Middle School between U.S. 27 and Drainage Canal No. 3. Significant flooding potential exists for large undeveloped areas in the undeveloped southern portion of the City and smaller areas along the eastern City boundary.

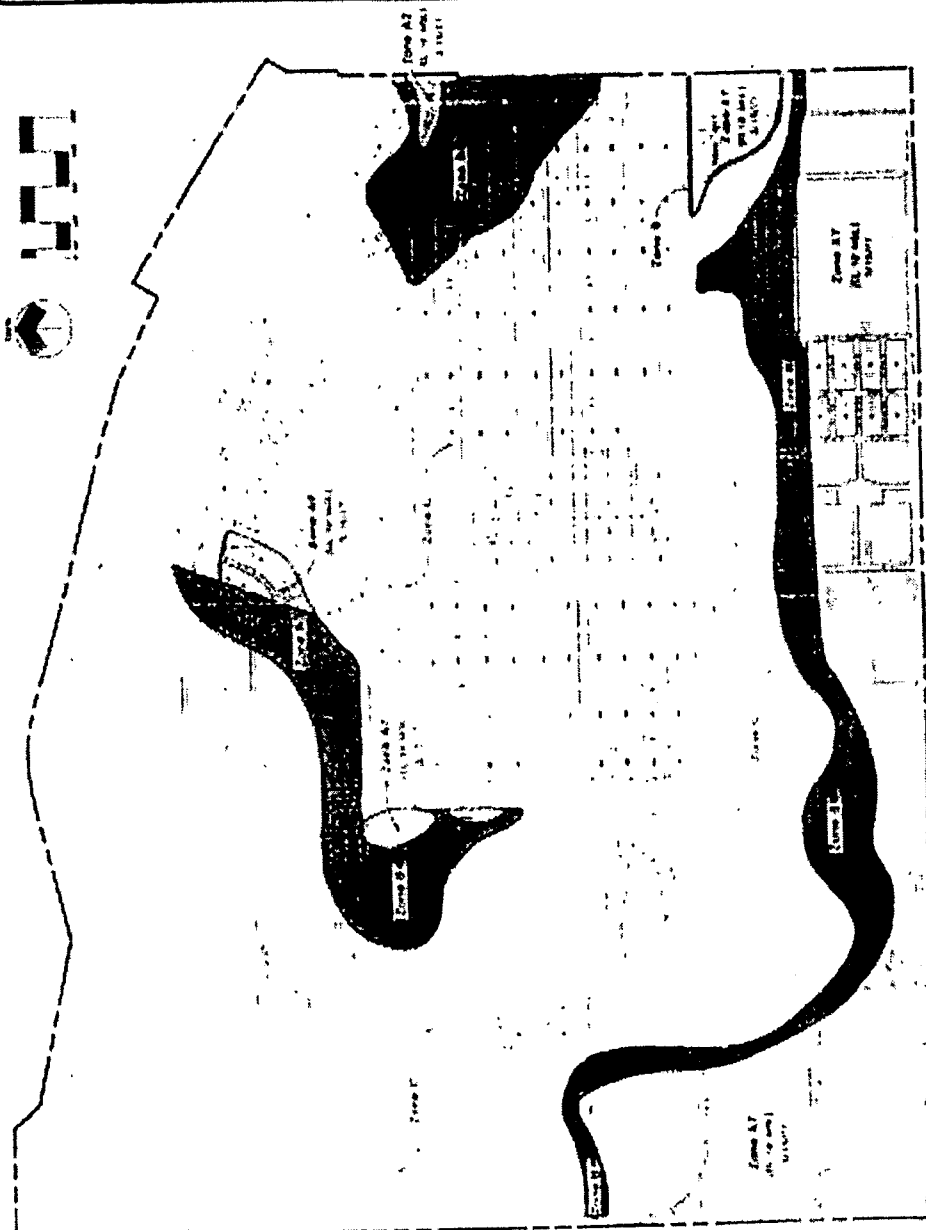
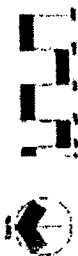
Floodplain Management Regulations

The City of Clewiston put into effect flood plain management controls for the City on March 7, 1977.

Provisions of this Ordinance No. 77-3 followed the Federal Insurance Administration report "The Flood Insurance Study for the City of Clewiston, Hendry County, Florida" dated April 1976 with Flood Insurance Map #4 1-02 dated March 15, 1976. This report and accompanying map, and any revisions thereto, were adopted by reference as part of the Ordinance. General Provisions of this Ordinance are as follows:

- | | |
|-----------|---|
| Sec. 6-19 | Flood hazard areas administration. Plan submission requirements. |
| Sec. 6-20 | Construction standards . elevation requirements, fill construction, anchoring, floors, walls and ceilings where flood-proofing is required, electrical and gas utility systems, plumbing, paints and adhesives. |
| Sec. 6-21 | Mobile Homes .special standards. Minimum blocking standards, tie down requirements, floor level elevation, surface drainage. |
| Sec. 6-22 | Variances |

FIGURE V - 5



City of **Clewiston** Comprehensive Plan

Flood Prone Areas

- Legend**
- Zone A** Areas of 100-year flood prone areas, per FEMA Flood Insurance Study.
 - Zone B** Areas of 100-year flood prone areas, per FEMA Flood Insurance Study.
 - Zone C** Areas of 500-year flood prone areas, per FEMA Flood Insurance Study.
 - Zone D** Areas of 100-year flood prone areas, per FEMA Flood Insurance Study.
 - Zone E** Areas of 100-year flood prone areas, per FEMA Flood Insurance Study.
 - Zone F** Areas of 100-year flood prone areas, per FEMA Flood Insurance Study.

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FLOOD INSURANCE STUDY

Drainage Deficiencies

Outdated, undersized, and broken, drainage infrastructure requires an annual program of replacement, and new structures to maintain an acceptable LOS. Therefore, the City takes proactive approach in the area of storm water control. A semiannual drainage project list budgeted for between \$150,000 and \$200,000 is selected by the Public Works Director and implemented. Project sites are determined by current conditions of importance.

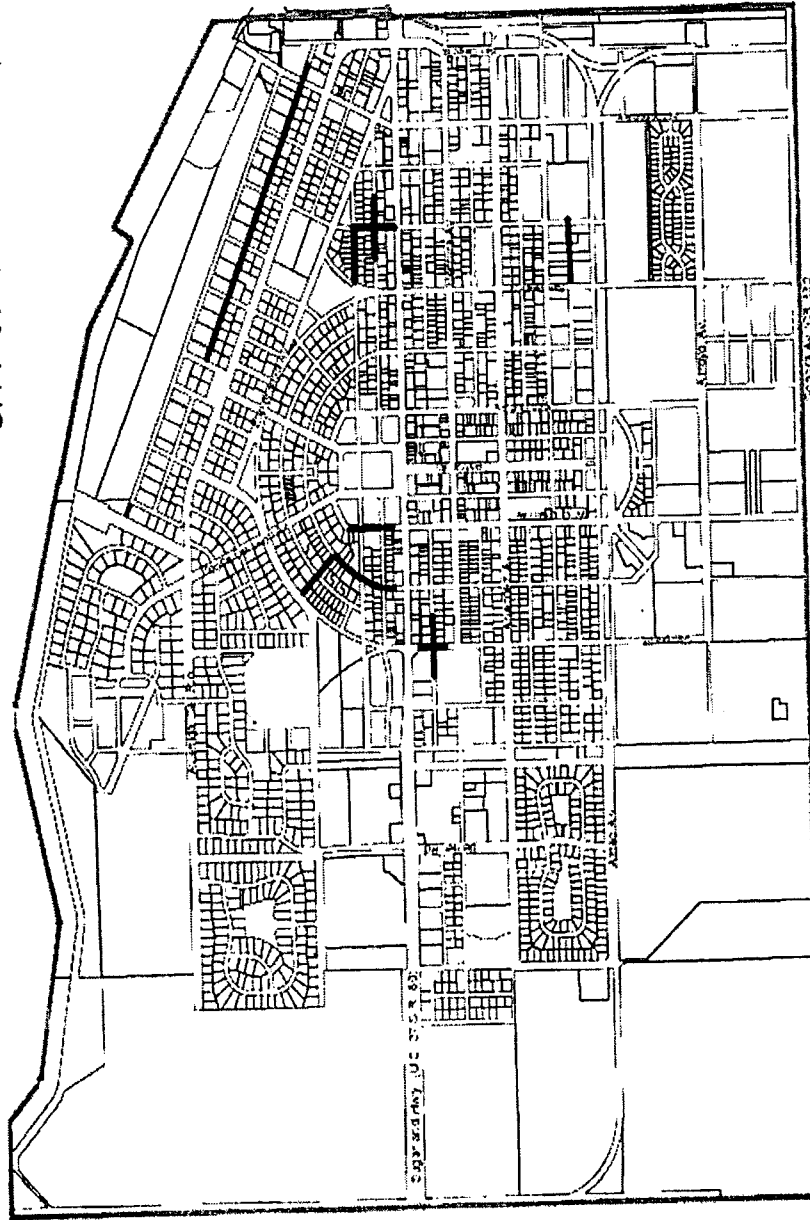
Figure V-6 shows ten street segments that have been identified as having drainage problems. The drainage problems are mainly due to antiquated and/or improperly installed drainage utilities and will need to be replaced to correct the problems. Projects addressing seven of these problem areas are listed below and are included in the City's Five-Year Schedule of Capital Improvements in the Capital Improvements Element

1. Arcade Drainage
2. W. Sagamore Drainage
3. Del Monte Drainage
4. W. WC Owen Drainage
5. San Gabriel Drainage
6. E. Osceola Drainage
7. E. Haiti Drainage

Because of this commitment, an integrated operational drainage maintenance program is implemented consisting of the following operations:

- Regular collection of trash and maintenance of swales designed to allow for the treatment of surface water before it enters the collection system.
- A street sweeper is operated an average of twenty (20) hours per week, where street gutters are swept clean and the debris is removed before entering the system.
- The vacuum system on the street sweeper, designed to clean out storm inlets, is operated an average of six (6) hours per week. A systematic approach is performed to insure that all inlets that can be and are serviced. The debris is removed from the inlet and disposed of properly, insuring the proper operation.
- A line cleaner is sent through pipe that is discovered, through the inlet cleaning process, to be plugged or not flowing at peak capacity.
- A well equipped maintenance division repairs and replaces inlets and pipe discovered to be broken or collapsed during the cleaning process.

Figure V-6
DRAINAGE PROBLEM AREAS
CITY OF CLEWISTON, FLORIDA



LEGEND
Drainage Problem Areas
City Limits

1000 0 1000 2000 Feet

Prepared by:
LaRue Planning and Management Services, Inc.
January, 2007

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Drainage Goals, Objectives, and Policies

- Goal 1:** Provide adequate, properly designed drainage facilities which protect life and properties from flooding, reduce erosion, and prevent degradation of the quality of receiving waters.
- Objective 1.1:** The City will identify and correct the existing deficiencies of the stormwater system, maximize the use of the existing system, and make necessary improvements to meet future needs.
- Policy 1.1.1:** The City adopts the following level of service standards for the stormwater system:
- | | |
|--------------------------|--|
| Primary Facilities: | Removal of 4.0 inches of runoff per day in developed areas and 2.5 inches of runoff per day in agricultural areas. |
| Secondary Facilities: | 3-year, 1-hour. (Interim) |
| Mm. 1st Floor Elevation: | 18.0 ft. NGVD or 18 inches above adjacent road crown, whichever is higher. |
| Water Quality Treatment: | First 1 inch of runoff or 2.5 inches times the percent of impervious area, whichever is greater, in accordance with SFWMD criteria, including credits for dry retention systems. |
- Policy 1.1.2:** The City will request the State Department of Transportation to undertake necessary studies and make drainage improvements to U.S. 27 as required to meet level of service standards provided in this element so as to eliminate current and potential future problems.
- Policy 1.1.3:** The City shall obtain and review data relating to the existing drainage conditions and stormwater management system under the jurisdiction of the City to determine needed improvements to the system and its operating condition in order to attain the established level of service standard. The interim level of service standard set forth in Policy 1.1.1 shall be reviewed and revised if necessary, in response to study results.
- Policy 1.1.4:** The City will provide routine maintenance to drainage facilities under its jurisdiction so as to maintain optimum capacity and prolong their service life.

- Policy 1.1.5:** As a part of the proposed stormwater master plan, the City will establish priorities for correcting existing problems and deficiencies and implement programs to ensure the identifies problems are resolved.
- Policy 1.1.6:** The City will coordinate with State and County regulatory agencies, the Clewiston Drainage District, and the South Florida Water Management District to ensure that all existing and future development within the City provides and maintains stormwater management facilities in accordance with regulations and requirements of such agencies and that existing conditions which are in conflict with such regulations and requirements be mitigated in accordance therewith.
- Policy 1.1.7:** The City shall require that on-site retention achieve a level of treatment equivalent to retaining the first one inch of runoff or 2.5 inches times the percent of impervious area, whichever is greater.
- Objective 1.2:** The City will incorporate into its approval process that applicants for future projects shall certify that all required permits of applicable regulatory agencies have been obtained at the time final approval is requested from the City.
- Policy 1.2.1:** Revisions will be made in the City's Land Development Regulations in accordance with S.163.3202 F.S., to achieve Objective 1.2.
- Objective 1.3:** The City will manage the use and development of floodplains to preserve natural and manmade drainage features, prevent property damage and avoid safety hazards due to flooding.
- Policy 1.3.1:** The City will vigorously enforce its floodplain management regulations and reuse them as necessary based on flooding experience and to fully comply with requirements of the Federal Emergency Management Agency.

Potable Water

Existing System

The City of Clewiston currently purchases potable water from the United States Sugar Corporation which operates a lime-softening plant utilizing water from Lake Okeechobee. By 2008, U.S. Sugar will cease to be a provider of bulk water to the City, the South Shore Water Association area and the unincorporated Harlem area. The Utilities Department averages approximately 3,800 water meters.

Treatment Plant

The original water treatment plant, located adjacent to the south corporate limits of the City in unincorporated Hendry County, was built by the U.S. Sugar Corporation in 1944, with a major upgrade to 6.0 MGD capacity in 1983. The plant was in excellent condition producing potable water which exceeded current public health quality standards. The source of raw water is Lake Okeechobee. The treatment process includes aeration, lime softening, coagulation, filtration, pre- and post-chlorination. It is transferred to on-site storage consisting of an elevated tank and two ground reservoirs with a combined capacity of 3.75 million gallons.

Distribution System

The City-owned distribution system consists of metered connections, approximately 39,000 feet of 6-inch and larger mains, 41,000 feet of 4-inch pipe, with 136 hydrants in the fire protection system.

The majority of the system was installed during the 1950's, about 50 percent cement asbestos pipe with the remainder being cast iron and PVC. City records for the year 1987 indicate metered purchases of 437.40 MG, metered sales of 386.53 MG, with 50.87 MG or 11.52 percent unaccounted for. Records for 1988 indicate 471.42 MG purchased, 408.34 MG sold, with 63.01 MG or 13.15 percent unaccounted for.

Normal city usage for fire service, line and hydrant flushing and other uses by City personnel, should aggregate between 4.0% and 5.0%, leaving 6.0% to 8.0% as line loss. For a 35-year-old system this loss is acceptable; indicating the system is well maintained and efficiently operated. The system serves all of the City of Clewiston and the adjoining unincorporated community of Harlem.

Impact on Natural Resources

Water is the only surrounding natural resource notably impacted by the water system. The withdrawal from the surface water source is regulated by the South Florida Water Management District (SFWMD) to limit impact upon the natural surface water impoundment

and additional water restrictions are imposed by that agency during water shortage periods. The City abides by all SFWMD requirements.

Needs Assessment

As stated earlier, by 2008, U.S. Sugar will no longer be providing water to the City. The City has recently obtained a 2025 Consumptive Use Permit for a new three million gallons per day (3 MGD) Reverse Osmosis Water Treatment Plant to supply potable water to the City, the South Shore Water Association and the unincorporated Harlem area. The South Shore Water Association provides water to the unincorporated areas between Clewiston and South Bay on the east and between Clewiston and Moore Haven on the west. The new plant is expected to be operational by August, 2007.

Historically, demand for potable water had averaged 125 gallons per capita per day (GPCPD). However, due to price increases imposed by the City, consumers have undertaken water conservation measures and there has been increased usage of water saving devices resulting in an 8% decline in per capita demand to 115 GPCPD.

The water supply source will be the Upper Floridan Aquifer and the permitted allocation is for 2.6 MGD of raw water, on an average annual day basis. Due to the change in treatment technologies and source of supply, the daily raw water per capita use rate is expected to increase from its current 115 GPCPD to 150 GPCPD. Finished water demands, however, are expected anticipated to remain at approximately 115 GPCPD

Based on anticipated raw water loss during treatment, the amount of finished water supply available under the new Consumptive Use Permit is approximately 2 MGD, which will support a population of approximately 17,000 within the facilities service area at a level of service of 115 GPCPD.

Based upon projections approved in the Lower West Coast Regional Water Supply Plan, the current facility design capacity of the City's new water treatment plant facility appears adequate to meet projected future demands in the service area out to at least 2020. However, it will be necessary for the City to apply for an increase in the Consumptive Use Permit allocation to ensure adequate water supplies to service the projected 2020 service area growth and water supply demands. The source of the additionally needed water supplies to meet the 2010-2020 demands will remain the Upper Floridan Aquifer.

Potable Water Goals, Objectives. and Policies

Goal 1: A reliable, healthful, and adequate supply of potable water to meet present and future needs of the City's population, as well as business and industrial establishments.

- Objective 1.1:** The City shall assure that public facilities have adequate capacity to serve proposed new development without exceeding level of service standards or that capacity will be available at time of impacts from such development and shall include methods to conserve potable water and maximize the use of the existing distribution system in lieu of extending the system to encourage scattered development.
- Policy 1.1.1:** The level of service standard for potable water distribution shall be 115 gallons per capita per day. This level of service shall be used as the basis for determining the availability of facility capacity and the demand generated by a development.
- Policy 1.1.2:** In accordance with S163.3202 F.S., the City shall analyze the feasibility of expanding requirements for low water consumption plumbing fixtures. Consideration also shall be given to providing incentives for xeriscape landscaping practices, special educational programs and establishment of progressive water rate structures.
- Policy 1.1.3:** The City shall not extend water distribution lines for the purpose of enabling additional direct service connections until a target of at least 70% utilization of the potential service connections to the existing distribution system has been achieved or authorized by subdivision plat approval or issuance of development permits; provided, however, that improvements intended to improve the quality of existing service shall not be so restricted.
- Objective 1.2:** The City shall monitor the water distribution system to identify deficiencies and determine the system's capacity to meet future needs.
- Policy 1.2.1:** The City shall study the distribution system to identify low pressure and flow areas with recommendations to upgrade pipe size and flow capability to meet current and future needs, with a prioritized funding plan.
- Policy 1.2.2:** The City shall revise its Capital Improvements Schedule for system upgrades.
- Objective 1.3:** The City will ensure that the existing distribution facility is kept in good operating condition.
- Policy 1.3.1:** The City will conduct an ongoing operation and maintenance program to service the distribution system.
- Policy 1.3.2:** The City will coordinate with the U.S. Sugar Corporation in maintenance of the water treatment plant.